

ABSTRACT

An isolated microorganism comprising a *Propionibacteria* strain. When the microorganism is fed to a ruminant, protein and fat levels in milk produced by the ruminant are increased, while body condition and milk production levels are maintained. When fed to the ruminant, the microorganism also has positive effects on various metabolic hormones and metabolites, e.g, an increase in energy balance, plasma non-esterified fatty acids levels, and plasma leptin level. Supplementation with propionibacteria reduced dry matter intake but did not affect milk production in the cows. Therefore, the propionibacteria of the invention made the cows more energy efficient as cows produced the same amount of milk, yet consumed less dry matter.